

CLAIMS

1. A method for hydrodynamic inclusion of a layer comprising a plurality of three-dimensional finite products of at least two, in some cases three or more nonwovens, tissue, possibly additional woven fabrics or knitted fabrics by means of liquid jets emerging continuously and uniformly over a working width of a nozzle bar, by spraying a liquid under pressure from fine nozzle openings arranged in a row from at least one nozzle strip extending over the working width of at least one nozzle bar towards the material web which is moving ahead of the nozzle bar, characterised in that a nonwoven which subsequently covers the middle layer is initially consolidated over the entire surface using water jets, the middle layer to be included, the finite three-dimensional material to be applied thereto, is laid on this consolidated nonwoven, these two layers are then covered with a further nonwoven which has been prefixed in the same way and everything together is again subject to hydrodynamic needling uniformly over the working width to join the two superimposed covering nonwovens together.
2. The method according to claim 1, characterised in that the covering nonwoven or nonwovens is perforated with fine holes produced by the water jets during the previous hydrodynamic consolidation.
3. The method according to claim 1 or 2, characterised in that the number of water jets which impacts on the covering nonwoven from the nozzle bar is about 5-20, preferably 10 jets per inch.

4. The method according to claim 1 to 3, characterised in that the water pressure during the perforating prefixing of the covering nonwoven is about 100 to 200, preferably 150 bar.
5. The method according to any one of the preceding claims, characterised in that the hydrodynamic joining of the covering nonwovens also takes place using water jets which impact on the sandwich nonwoven with a greater spacing of about 5-20, preferably 10 jets per inch.
6. The method according to any one of the preceding claims, characterised in that the water pressure when joining the superimposed covering nonwovens is between 100 and 200 bar, preferably 120 to 150 bar.
7. The method according to claim 1-6, characterised in that the covering nonwovens are needled on both sides for consolidation.
8. A sandwich nonwoven comprising a middle layer of finite three-dimensional goods and water-needled nonwovens covering said layer on both sides, characterised in that the nonwovens are provided with fine holes having a spacing of about 5 to 20, preferably 10 hpi and the nonwovens adhere fixedly to one another around the middle layer whilst the goods of the middle layer remain substantially unchanged three-dimensionally.
9. The sandwich nonwoven according to claim 8, characterised in that the finite, three-dimensional goods consist of cushion-like products such as hygiene commodities.